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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF OREGON
PORTLAND DIVISION

**OREGON NATURAL DESERT
ASSOCIATION,**

Plaintiff,

v.

JEFF ROSE, Burns District
Manager, BLM, *et al.*,

Defendants,

and

No. 3:09-cv-369-JR

**NINTH DECLARATION OF
DR. CRAIG MILLER, M.D.**

HARNEY COUNTY,

Defendant-Intervenor-
Cross Claimant.

I, CRAIG MILLER, state and declare as follows:

1. The following matters are personally known to me, and if called as a witness I would and could truthfully testify thereto. I am the same Craig Miller who has submitted eight prior declarations in this case [ECF ## [56](#), [122](#), [167](#), [186](#), [196](#), [220](#), [296](#), [339](#)].¹ I submit this declaration in support of the Oregon Natural Desert Association's ("ONDA") application for fees, costs, and other expenses.

INTRODUCTION

2. I serve as a Geographic Information System ("GIS") consultant and specialist for ONDA. I have spent nearly 2,000 hours, over the course of more than a decade, conducting detailed GIS analysis and mapping, including associated field surveys, supporting and informing ONDA's successful litigation in this matter. My work has gone to the very heart of ONDA's concerns in this case: that the Bureau of Land Management's ("BLM") failure to document the physical condition of the routes the agency had proposed to open to motorized use and mechanical maintenance on Steens Mountain led to incomplete environmental reviews and uninformed travel plan decisions.

3. ONDA anticipates that, in opposing the EAJA application, the BLM will object to the costs and expenses associated with my work on this case. To be sure: the amount of time I spent on this case was substantial; yet, it was crucial to ONDA's ability to evaluate the Steens

¹ I also submitted three declarations with the Department of the Interior's Board of Land Appeals, each of which appears in the administrative record (AR 307, RAR 21854, RAR 22113), and one declaration in the Ninth Circuit Court of Appeals [[App. ECF 15-4](#)].

Mountain route network, including BLM's continually fluctuating travel plan proposals, and to figure out how best to explain and illustrate ONDA's concerns to the courts. Below, I will briefly summarize the background of the case and why ONDA needed my expertise and experience in GIS work to prepare its case, and then describe the tasks I performed in this case, including some basic technical aspects of what GIS and spatial analysis work consists of, and how I had to continually piece together BLM's scattershot and piecemeal data and planning documents—both for ONDA and for this and the appellate court.

BACKGROUND

4. I am a charter member and past president of the Board of Directors of ONDA. I served on ONDA's board from the time the organization was founded, in 1989, until 2008. I served as president of the board from 2004 to 2006. I have served as a GIS consultant and specialist for ONDA for over 18 years. As part of this GIS work, I actively participate in ONDA's wilderness inventory program including by conducting field surveys and subsequent GIS analysis and mapping. Prior to my work with ONDA, I was a board certified emergency physician for 19 years.

5. When I reviewed BLM's proposed Travel Management Plan (2007) ("Travel Plan") and proposed Comprehensive Recreation Plan (2015) ("Recreation Plan"), and the plans' accompanying environmental assessments ("EA"), it became obvious that BLM's route findings and designations were highly flawed. I knew this because ONDA had recently completed a comprehensive inventory of routes throughout the Steens Mountain Cooperative Management and Protection Area ("CMPA"). ONDA did this as part of preparing a citizen wilderness proposal for BLM to consider as the agency prepared the underlying land use plan for this area, the Andrews-Steens Resource Management Plan ("RMP") (2005). ONDA had provided its

wilderness report to BLM in 2002, about four and a half years before BLM released its EA for the TMP in April 2007. SAR 1737–3982, 3984–4073. ONDA gathered additional photographic documentation in 2005 and 2006 and submitted a further report in May of 2007. AR 12946–13257. Both the 2002 report and the 2007 report include maps with geo-referenced photographs of every route we visited, as well as recommendations for route closures. I was the principal author of each of those reports.

6. In the Steens Act, Congress had directed BLM to prepare, simultaneously with its land use plan for Steens Mountain, a “transportation plan” that was to be “integral” to the RMP and “comprehensive” in scope. Thus, ONDA’s wilderness inventory work was critical for surveying current routes and route conditions on Steens Mountain. As the Ninth Circuit has noted, Congress has defined a “wilderness” as a roadless area of 5,000 acres or more in size that is generally natural in condition and has outstanding opportunities for solitude or for primitive and unconfined recreation. *Or. Natural Desert Ass’n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1097–98 (9th Cir. 2010) (citing 16 U.S.C. § 1131(c)(1)). Roadlessness is the key factor: “Because 16 U.S.C. § 1131(c)(1) defines wilderness as an area which ‘generally appears to have been affected primarily by the forces of nature,’ the BLM has long treated the presence of roads as cancelling out any other wilderness characteristics an area might otherwise have, as they defeat the ‘natural conditions’ wilderness characteristic.” 625 F.3d at 1107.

7. In ONDA’s inventory of Steens Mountain, the group identified a very large number of routes that were eroded, washed out, difficult or dangerous to travel, causing resource damage, redundant, or simply had been “reclaimed by nature” due to nonuse over the years. In its reports, ONDA recommended that most of these routes be either permanently closed or closed to the public but left open on a limited basis for administrative use by BLM or use by those

holding BLM-issued permits (*e.g.*, to graze livestock on the public lands) that might require motorized travel.

8. In conducting its surveys, ONDA followed BLM's published wilderness and route inventory procedures described in the agency's 2001 *Wilderness Inventory Study and Procedures* handbook. RAR 21919. The 2001 handbook described the required methods and content for BLM's surveys as well as for citizen-prepared reports like ONDA's. For example, it required BLM and the public to take ground-based photographs to document actual, physical road conditions. That handbook was based on BLM's original 1978 version (SAR 0001), which guided the agency's initial wilderness inventory required by the Federal Land Policy and Management Act ("FLPMA") back in the 1970s.

9. BLM rescinded its 2001 handbook in 2003 under the George W. Bush Administration. The agency adopted a new policy that it supposedly had no obligation whatsoever to consider wilderness values on the public lands. ONDA challenged that new policy and won a landmark decision in this Court establishing that BLM must consider environmental impacts to wilderness just like any other resource or value on the public lands. *Or. Natural Desert Ass'n*, 625 F.3d at 1121–22. After that, the Barack Obama Administration reinstated the handbook, and it remains in effect today.

10. BLM's handbooks set out key definitions. Most importantly in this case, since the passage of FLPMA in 1976, BLM has defined a "road" as a route that has "been improved and maintained by mechanical means to insure relatively regular and continuous use." A "way" or "primitive route," on the other hand, is a route maintained solely by the passage of vehicles. The BLM handbook includes further detail on what each of these elements of a road is. ONDA

applied those elements in its inventory work, using BLM's field inventory forms and methods to collect, analyze, and present data to the agency.

11. As required by BLM's handbooks, the ONDA reports include maps identifying the boundaries of each roadless area identified, annotated road and photo logs with Global Positioning System ("GPS") locations cued to the maps, narratives analyzing each inventory unit's wilderness characteristics including roadlessness, and more than 1,600 GPS-referenced photographs. Nearly all of ONDA's photographs document routes conditions because, as I mentioned, the presence of a "road" cancels out the other wilderness conditions. Over the course of this litigation, I submitted several hundred more photographs and maps to BLM, to the Board of Land Appeals, to this Court, and to the Ninth Circuit.

EXPERIENCE

12. After practicing emergency medicine for nearly two decades at St. Charles Medical Center in Bend, I transitioned full-time to another passion—environmental health. My training in GIS began in 1999 when I began a 2-year GIS program at Central Oregon Community College. I completed the program in the summer of 2001 with an Associate of Science degree in GIS, and began part-time work for the Deschutes Basin Land Trust (now the Deschutes Land Trust), a non-profit organization based in Bend, Oregon. At the same time, I applied for, and received a grant to set up a GIS program for ONDA. I have now spent more than 18 years overseeing and running ONDA's GIS program. I have also contracted GIS work for multiple other non-profit organizations (including Hart-Sheldon Conservation Fund, Friends of Hart Mountain and Nevada Land Trust.)

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13. Over the course of my career as a GIS analyst, I have become familiar with/expert in ESRI software relating to spatial editing, querying, analysis, and cartography as well as field survey methods and tools.

14. My role as a GIS professional and consultant is to provide scientific evidence and visual representation (through photographs, technical narrative, and maps) to help ONDA evaluate environmental concerns, develop and assess legal theories to address those concerns, and then explain those concerns to agency decisionmakers and courts. In my opinion, the photographs, maps, analyses, and studies I prepared for this case were essential to ONDA ultimately prevailing in this case. These analyses and studies provided scientific evidence that called into question and controverted BLM's assumptions about existing routes on Steens Mountain. The information I collected and analyzed helped lead the district court to order several injunctions preventing the use and maintenance of non-existent or primitive routes, and it was this information that demonstrated that BLM failed to establish an accurate baseline of route conditions on Steens Mountain by showing that BLM inaccurately claimed there were roads where none, in fact, existed.

15. Starting in November of 2006, ONDA retained my consultant services to assist it in preparing the above-captioned case. Although ONDA did not file its complaint until 2009, it knew because of the obvious errors and deficiencies in the BLM route inventory, and from its success in having the prior Steens Mountain transportation plan invalidated, that it would be filing suit again when BLM issued a new travel plan. ONDA spent several years ahead of that reviewing BLM's travel planning documentation and environmental assessments, and gathering its own inventory information in order to evaluate BLM's assumptions and route proposals. My time and expense records, which I prepared contemporaneously with my services for ONDA, are

attached to Mr. Lacy's declaration as part of his Exhibit C. I kept my time records and listed the description of the tasks performed in accordance with the practices for billing similar work on GIS analyses that are standard among GIS specialists. I also provided detailed explanations of my work at each step of the way in the declarations I filed with the courts. All told, I have spent nearly 2,000 hours assisting ONDA over the course of this 14-year project.

DISCUSSION

16. In this case, the evidence and visual aids that I provided include 2,998 photographs, 213 GIS datasets, 783 maps, 78 spreadsheets, and 155 written documents. In addition to the data and spatial analyses I provided with declaration testimony throughout the proceedings, I also was the principal creator of all of ONDA's route inventory reports submitted to BLM (some of which are described above in paragraph 5). These include: the narratives, maps and aerial images submitted with ONDA's 2015 comments on BLM's Recreation Plan EA (SUPP 1384–1456); the maps, photographs and tables submitted with ONDA's 2014 comments on BLM's Recreation Plan EA (CRP 3374–3746); the 2007 ONDA *Route Inventory Report* (AR 307–618), the 2007 ONDA *Steens Transportation Plan Recommendations* (AR 12946–13257), the 2003 ONDA *Steens Mountain CMPA Road Closure Recommendations* report (SAR 4074–86), and the 2002 ONDA *Wilderness Inventory Report* (SAR 1737–3981 & SAR 3984–4073).

17. Photographs provide direct evidence of conditions on the ground. Their value lies in the unbiased and indisputable nature of what they record. Using GPS-enabled cameras and other devices, each photograph ONDA took in the field contains embedded metadata that chronicles the latitude, longitude, and in most cases the direction the photo was taken. This feature allows anyone to cross-check and authenticate the photo location and also provides additional data that can be used for future mapping, monitoring and analyses. And this is why

photographic evidence remains the “gold standard” of evidence when it comes to route surveys like the ones at issue in this case.

18. My work on this case required particular skill because of the remoteness and largely roadless character of Steens Mountain. Collecting and processing photos to document the *absence* of something (roads) that BLM claimed was present on the ground takes special skill. It is important to know when to walk, rather than drive a (purported) route. Special skills are required to find and follow routes, especially those that are obscure or nonexistent—in other words, most of the 200-plus miles of routes of concern at issue in this case. To document a nonexistent route in its entirety (as the IBLA suggested was required, in one of its now-vacated rulings) requires hiking cross-country while staying true to a GPS line that represents the purported route and taking georeferenced photos every few hundred feet or less. Notes are recorded on paper recording the photo name, what the photo shows, and direction the photo was taken. If the route is several miles in length, wilderness survival skills are required. I have personally collected hundreds of the photographs ONDA relied upon in this case, including over multiple miles of obscure and nonexistent routes.

19. Once the photographs have been collected in the field, they need to be downloaded onto the computer. The photos are renamed to match the names on the written notes—using a standardized naming convention using Better File Rename software. They are subsequently watermarked (photo name, date, latitude, longitude, and direction) using GeoRobo software. The same software is used to create a point “shapefile” that can be used to show the exact location on a map of where each photo was taken. A shapefile is a GIS dataset used for mapping. Any notes taken in the field are transferred to a spreadsheet and then joined to the shapefile. The entire, detailed process takes specialized GIS skills.

20. GIS datasets provide the infrastructure from which maps are created. Using ESRI ArcMap software, the fundamental spatial unit is called a shapefile. A shapefile can be in the form of a point, line, or polygon. These are the entities that form a map. A shapefile can be created de novo or derived from another shapefile. This case required me to develop numerous new and derived shapefiles. Each shapefile contains a database to which information can be added and calculated. Various analytical tools can be used to create new information represented by new shapefiles. For example, a 1-mile buffer can be created along a line that represents a road, resulting in an area shapefile. I used this method to map and calculate the areas within the CMPA that are within 1 mile of all TMP open routes. *See, e.g.*, Rasmussen Decl. [54] ¶¶ 46–65 (declaration describing how buffer maps I created for this litigation could illustrate noise contours and roadless areas); AR 10119 (one of my buffer maps, attached to an ONDA comment letter to BLM).

21. Once a shapefile is created, information can continue to be added over the course of years. For example, as BLM made changes to a route configuration or length on its various maps, I would need to make a corresponding change to existing shapefiles, as well as add a note that BLM had made a change. Adding such data can be time-consuming, with many hours sometimes necessary to keep it current. Throughout the course of this case, I have continually created, updated, and maintained the hundreds of shapefiles used to illustrate ONDA's concerns. Many times it was necessary for me to provide data to BLM so it could review ONDA's evidence and survey results, as part of court briefings and detailed settlement discussions, and sometimes because BLM itself simply did not have basic information on the routes and route network at issue. *See also* Notice of Hard Copy Filing of GIS Data [189] (lodging with the court GIS data that I created); Seventh Miller Decl. [296], Attachment C (GIS datasets list provided to

Court); July 8, 2011 Opinion and Order [118] at 16 (ordering parties to “prepare a map and accompanying GIS data to unambiguously delineate their proposal”).

22. In addition to generating maps and spatial analyses for ONDA, I also spent considerable time reviewing shapefiles and other GIS data generated by BLM, including data this Court ordered the agency to lodge with the Court and share with ONDA. *See, e.g.*, Fourth Miller Decl. [186] ¶¶ 3–15 (describing my review of GIS data BLM filed with the Court, as well as further such data that still had not been released by the agency); Fifth Miller Decl. [196] ¶¶ 4–9 (further discussing multiple BLM data sets under review); *see also* May 31, 2012 Opinion and Order [175] at 4–6, 15 (ruling that the “whole record” includes agency “GIS data sets” and ordering BLM to provide GIS data for Travel Plan routes including agency’s so-called Obscure Routes).

23. GIS-related documents include spreadsheets and map packages. Spreadsheets can either be created *de novo* or derived from shapefiles that have been populated with metadata. If created from scratch, special methods can be used to join the spreadsheet to a shapefile. This is the method most often used to add field information on photo point datasets. Map packages are a series of related maps that are joined into a single multipage document. A prime example is the “Transplan_pkg07” created in 2007 to show ONDA’s comprehensive collection of CMPA route photo maps. AR 12946–13257. Creating documents can be both technical and time-consuming, as they were in this case.²

² I include two exhibits with this declaration to help illustrate my point. First, Exhibit A is a “List of Data Sets Used to Create Declaration Maps.” I originally submitted this list as an attachment to my Seventh Declaration [296], but I include it here again because it illustrates the complexity and sheer number of datasets necessary to undertake the types of spatial and environmental analyses I completed for ONDA in this case. And second, Exhibit B is a table listing every map, shapefile, spreadsheet, and document I prepared for ONDA’s preparation and handling of this case.

24. Maps are the visual representation of the scientific evidence gathered. A map tells a story that helps make sense of a sometimes complicated spatial concept or the ground-based facts across a vast geographic area like Steens Mountain. In order to be effective, a map must be relatively simple, but compelling. Maps were an essential tool in this case, without which the arguments would have been lost in the haze of contradiction and incomplete information that BLM brought to the table. *See, e.g.*, First Miller Decl. [56] ¶ 13 (explaining how I had to generate estimates of historic route mileages because BLM had failed to provide that information in its GIS datasets), ¶ 30 n.6 (numerous route reference numbers missing from BLM's GIS data layer of supposedly agency-inventoried routes). Some spatial analyses and maps were for internal use to help inform ONDA's arguments. Others were used to inform the court. BLM has suggested that my time spent was immaterial to the outcome of ONDA's litigation. However the collection, processing, and visual explanation of the scientific evidence was crucial to ultimately tipping the playing field back to a level position.

25. As noted, I submitted a total of eleven declarations in this case. Most were quite detailed and included maps, photographs, satellite images, and detailed tables summarizing information on a route-by-route basis. *See, e.g.*, Eighth Miller Decl. [339], Exhibits A & B. As I explained in one declaration, I created for the court a summary of the overall situation for routes open versus closed under the Travel Plan, as amended by the Recreation Plan, because that was information that the BLM had never provided in any single, easy to use and understand place—either in its court papers or in any public environmental review document. *See* Seventh Miller Decl. [296] at ¶ 2.a. I had to figure out for ONDA (and the courts) which BLM routes were open or closed based on an ever-changing set of BLM and IBLA decisions and constantly changing GIS datasets. *See id.* at ¶¶ 2–4; *see also id.* at ¶¶ 8–9 (explaining how I created tables and maps

based on these analyses and data obtained from the BLM); [App. ECF 15-4](#) at ¶ 2 n.1 (explaining that I created a map to illustrate the routes subject to court's long-standing injunction, because BLM had only provided a list of the routes).

26. I also created the map and tables that the parties used in their stipulation on remedy, approved by this Court, which keeps the existing injunction in effect until BLM completes a new NEPA review and issues a new travel plan decision for Steens Mountain. *See* Stipulation and Order [\[376\]](#), Exhibit A.

27. The reasonable cost of my services, analyses, and studies related to litigation is \$100/hour. This is in line with what similar GIS experts in the Bend, Oregon area charge for this work.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

DATED this 9th day of March, 2020.

s/ Craig Miller

Dr. Craig Miller, M.D.